



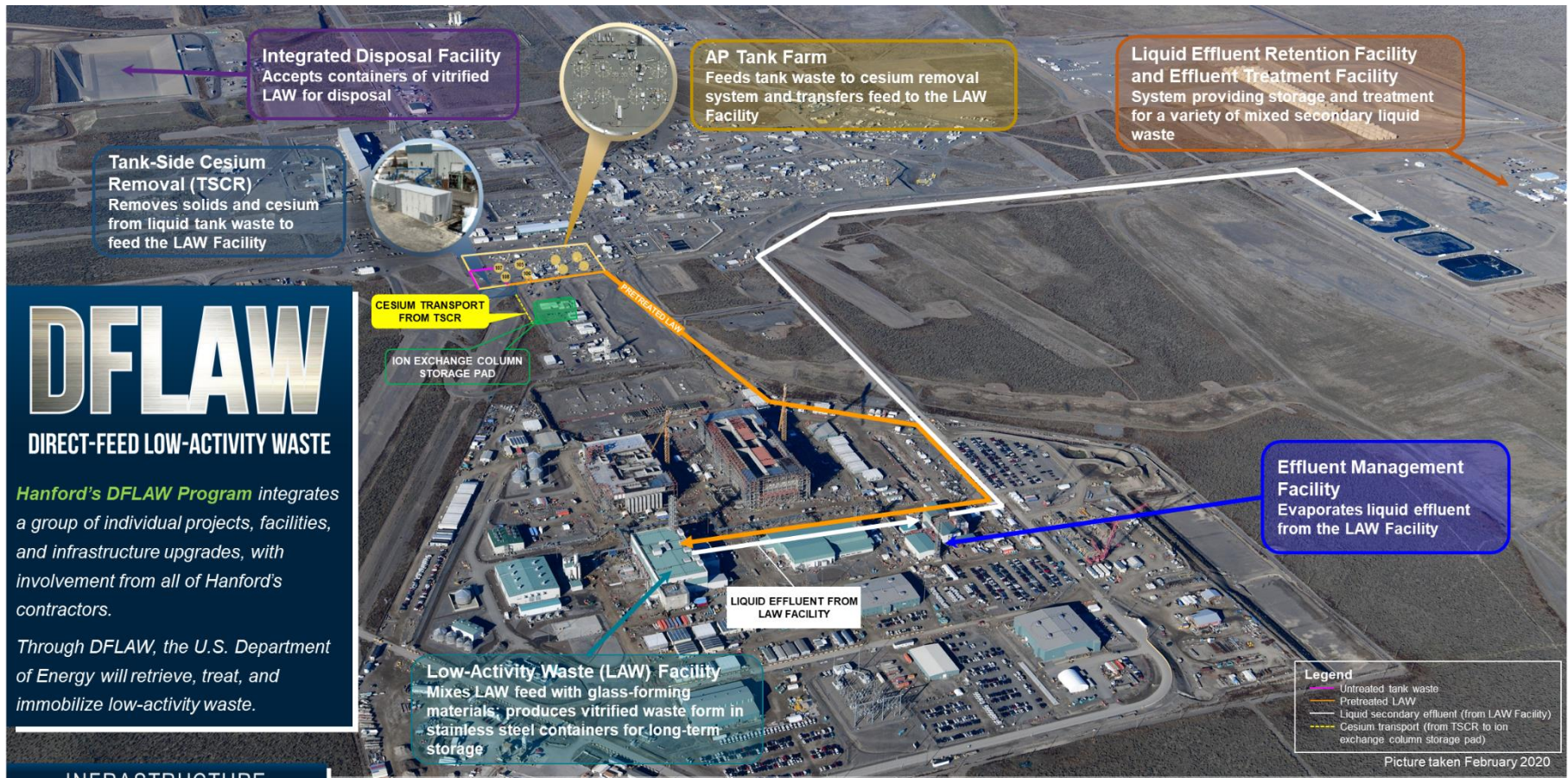
THE HANFORD SITE

Proposed Permit Modification in Support of the Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility Decontamination Process

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U.S. Department of Energy, Office of River Protection
Tank Farms Programs Division

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Direct-Feed Low-Activity Waste Configuration



DFLAW DIRECT-FEED LOW-ACTIVITY WASTE

Hanford's DFLAW Program integrates a group of individual projects, facilities, and infrastructure upgrades, with involvement from all of Hanford's contractors.

Through DFLAW, the U.S. Department of Energy will retrieve, treat, and immobilize low-activity waste.

INFRASTRUCTURE

ELECTRICAL

WATER/SEWER

ROADS

SECURITY

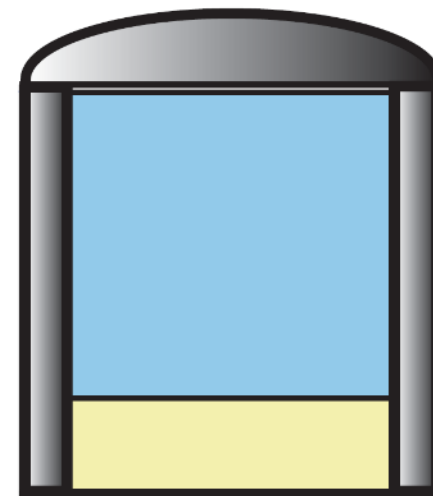
INFORMATION TECHNOLOGY

EMERGENCY PREPAREDNESS

Direct-Feed Low-Activity Waste Configuration (cont.)

Chemical and radioactive waste is stored in Hanford's Tank Farms. The U.S. Department of Energy (DOE) will safely, efficiently and effectively treat Hanford tank waste through the Direct-Feed Low-Activity Waste (DFLAW) Program to vitrify it (immobilize it within glass).

- Secondary liquid waste will be created during the vitrification of low-activity waste in the Waste Treatment and Immobilization Plant (WTP) during the DFLAW process
- The Liquid Effluent Retention Facility (LERF) and the 200 Area Effluent Treatment Facility (ETF) will be used to manage and treat the secondary liquid waste

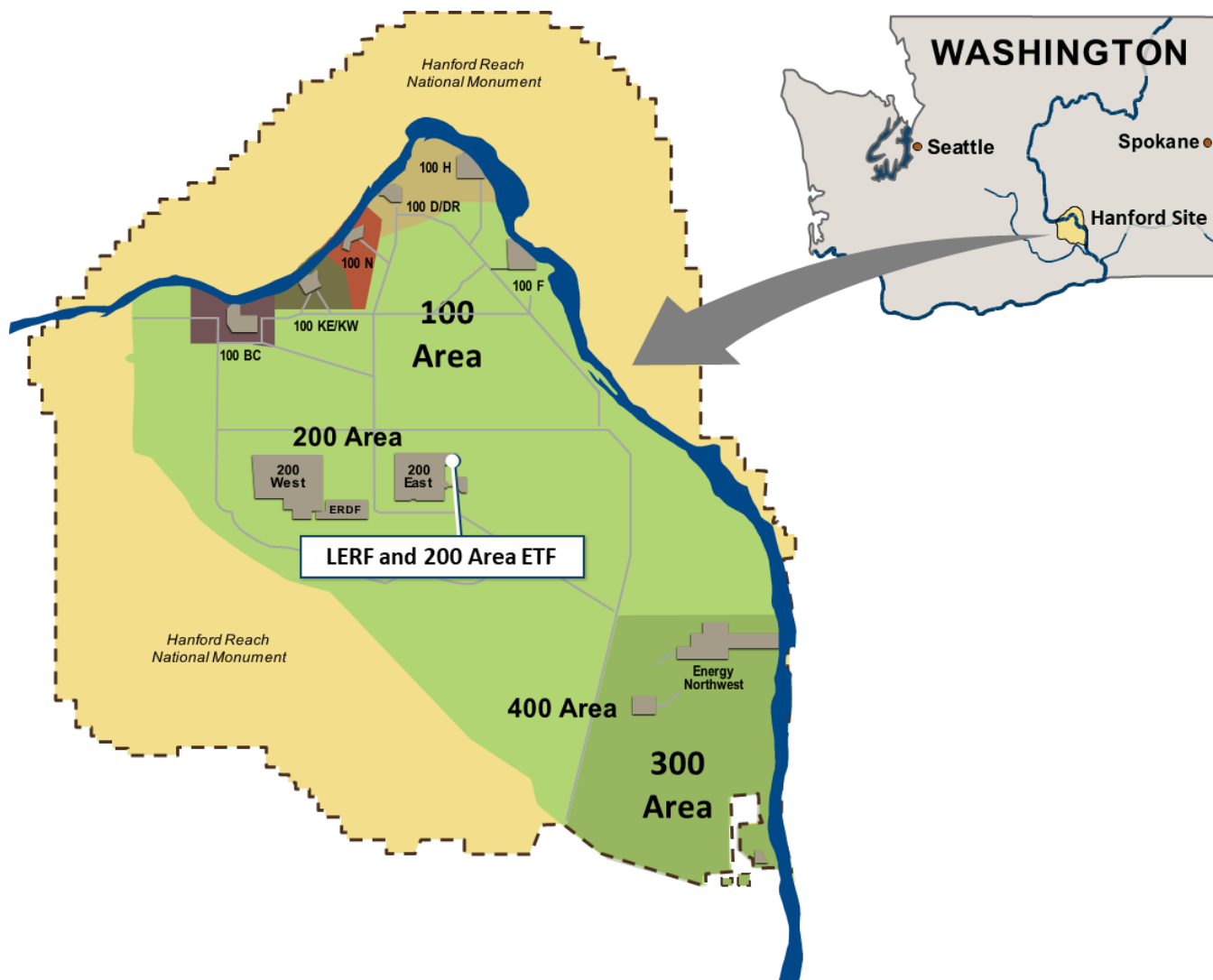


Typical tank contents with a liquid (blue) and solid (yellow) fraction shown

Regulatory Framework for Permitting Action

- The *Resource Conservation and Recovery Act* (RCRA) Hanford Dangerous Waste Permit governs dangerous waste treatment, storage and disposal at the Hanford Site
- The Washington State Department of Ecology (the regulator) issued the current Hanford Sitewide permit (Revision 8C), which governs dangerous tank waste treatment, storage and disposal
- DOE and contractor Washington River Protection Solutions (the permittees) are proposing a Class 2 permit modification to the LERF and 200 Area ETF permit, Operating Unit Group 3

Hanford Site Map



These facilities work to store, treat, and dispose of large volumes of liquid waste, which will include liquid waste generated from the WTP upon startup of DFLAW operations.



Aerial view of the LERF (top) and 200 Area ETF (bottom)

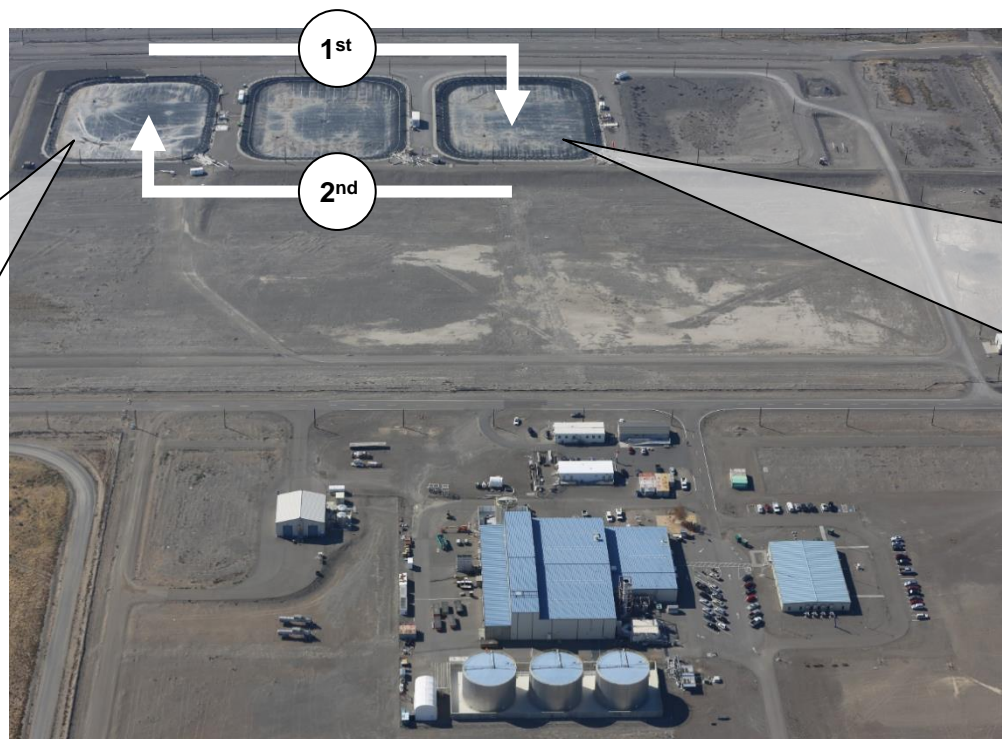
- RCRA requires that waste be identified by applicable listed waste code. To ensure the most effective and efficient treatment of liquid waste at the ETF, ideally each waste stream should be treated to the waste codes and chemical properties that are uniquely applicable.
- In accordance with RCRA, once a hazardous waste and its applicable waste codes have been identified, the listed waste codes apply to all future liquid waste that is stored in that tank system or surface impoundment.
- Procedures to remove waste codes from the tank systems and surface impoundments have been developed.

- A waste is determined to be a hazardous waste if it is specifically listed on one of four lists (the F, K, P and U lists) found in 40 CFR 261.
- The F list identifies non-specific sources from certain industrial or manufacturing processes as being hazardous. Examples include the following:
 - Spent solvent wastes (F001 – F005)
 - Multisource leachate (F039)
- The P and U lists identify discarded (or intended to be discarded) commercial chemical products as being hazardous. An example includes tetrachloroethylene (U210).

Why Decontaminate at LERF

- Waste stored in the LERF basins is typically segregated to optimize future processing at the 200 Area ETF. Segregation also helps isolate waste codes assigned to the various waste streams received at each LERF basin.
- Non-segregation could result in a LERF basin and its contents carrying multiple waste codes. After the non-segregated contents are removed, a LERF basin decontamination procedure may be needed to remove waste codes that would no longer apply to the waste being received at the basin.

The contents of LERF Basin 44 will be transferred into LERF Basin 42 to support cover replacement. A decontamination procedure is needed to remove the F039 waste code from LERF Basin 42.



LERF Basin 44:
F039

After 1st Transfer:
F039

After 2nd Transfer:
F001 – F005, F039

LERF Basin 42:
F001 – F005

After 1st Transfer:
F001 – F005, F039

After 2nd Transfer
F001 – F005, **F039**

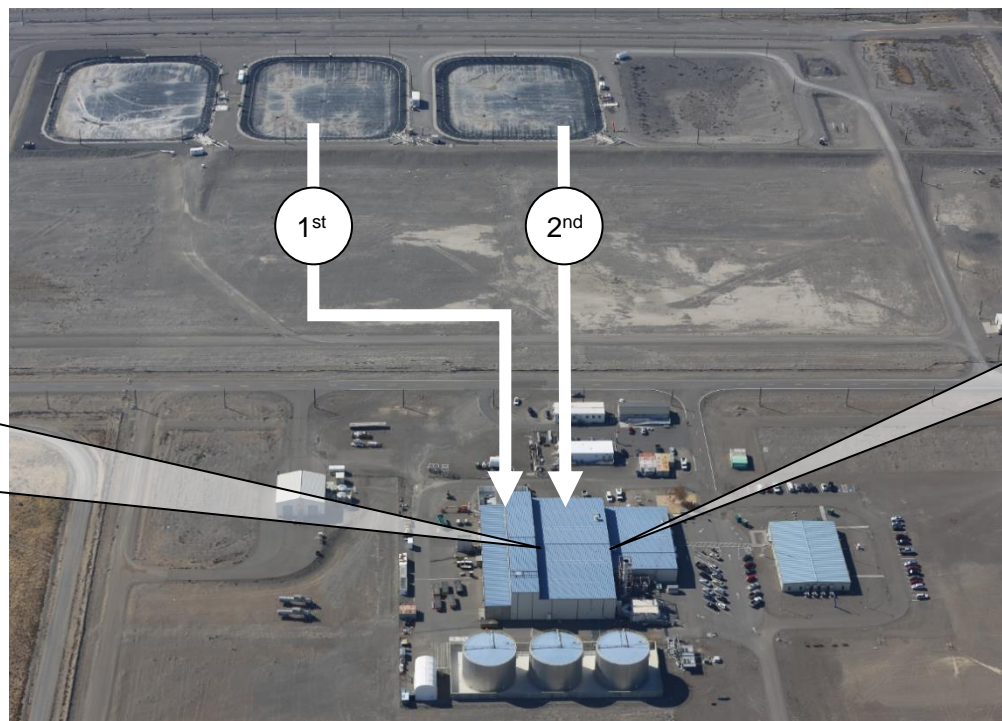
After Decon:
F001 – F005

Example: LERF Basin Decontamination

Why Decontaminate at 200 Area ETF

- The 200 Area ETF processes waste from the LERF basins in campaigns. Each campaign is typically limited to the contents of a single basin, with a specific waste-processing strategy unique to the composition of the waste being treated.
- Performing campaigns from different basins could result in the 200 Area ETF tank systems and its contents carrying multiple waste codes. After a campaign is completed, an ETF tank system decontamination procedure may be needed to remove waste codes that would no longer apply to the subsequent campaign.

ETF will process LERF Basin 43 waste followed by LERF Basin 42 waste. A decontamination procedure is needed to remove the U210 waste code from the 200 Area ETF.



ETF After LERF
Basin 43 Campaign:
F001 – F005, **U210**

ETF After Decon:
F001 – F005

ETF After LERF
Basin 42 Campaign:
F001 – F005

Example: ETF Tank System Decontamination

- Federal and state regulations describe procedures that allow for the reuse of empty containers, and in specific circumstances also removes any prior waste code(s).
 - A container means any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled.
- The LERF is comprised of operating surface impoundments (basins). The 200 Area ETF is comprised of operating tanks systems and ancillary equipment.
- The principles of the proposed decontamination procedures build upon the RCRA container reuse regulations.

- This proposed permit modification would implement a similar approach using new procedures for decontamination of the LERF and 200 Area ETF
 - Table B-3 identifies the listed waste constituents and corresponding performance standards that must be met by the decontamination procedure.
 - Section B.3.2.1 (for LERF) and Section B.3.2.2 (for 200 Area ETF) describe the steps and procedures towards determining whether the LERF and/or 200 Area ETF are decontaminated of a listed waste code(s).

The modified addenda for LERF and 200 Area ETF permit modification include the following:

- Addendum B, “Waste Analysis Plan”
- Addendum C, “Process Information”

Refer to the corresponding Hanford Dangerous Waste Permit Change Notice for a full description of the proposed changes.

LERF and 200 Area ETF Class 2 Permit Modification

- A 60-day public comment period is open through December 27, 2021.
- Submit comments via mail or electronically (preferred) to the Washington State Department of Ecology at the address below:



Daina McFadden
Washington State Department of Ecology
3100 Port of Benton Boulevard
Richland, WA 99354
<http://nw.ecology.commentinput.com/?id=B6ikH>

Questions?

The Hanford Reach
White Bluffs Overlooking the Columbia River